

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 10/665,149

REMARKS

Upon entry of this Amendment, claims 1-8, 38, 41, 42, 44, 45, 47 and 48 are all the claims pending in the Application. Of these claims, claims 1, 38, 41 and 42 are in independent form. Claims 38, 41 and 42 are amended. Claims 40, 43 and 46 are cancelled without prejudice or disclaimer. Further, new claims 47 and 48 are added. No new matter is presented by this Amendment.

To summarize the Office Action, the Examiner objects to the specification and to the claims because subject matter of claims 41-43 is allegedly not supported by the specification. Additionally, claims 1-3, 5, 38 and 40 are rejected under 35 U.S.C. § 102(e) as being anticipated by Takahashi (U.S. Patent No. 6,419,336), claim 4 is rejected under 35 U.S.C. § 103(a) based on Takahashi in view of Murayama et al. (U.S. Patent No. 6,130,700, hereinafter “Murayama”), and claims 6-8 and 44-46 are rejected under 35 U.S.C. § 103(a) based on Takahashi in view of Kubo (U.S. Patent No. 6,257,688). The outstanding objections and rejections are addressed as follows.

Objection to the Specification and Claims 41-43

With respect to the objection to the specification and to claims 41-43, Applicant notes that claims 41 and 42 are amended to clarify that “*either one* of the recording on the basic unit pixel and the recording on the fine unit pixel is performed by a single movement of the recording head in the main scanning direction.” Applicant submits that the limitations of claims 41 and 42 are supported by the specification and, for the reasons set forth below, should be allowed. Further, Applicant notes that the objection to claim 43 is moot in view of the cancellation of this

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 10/665,149

claim. Therefore, reconsideration and withdrawal of these grounds of objection is respectfully requested.

Claim Rejections - 35 U.S.C. § 102(e)

Claims 1-3, 5, 38 and 40 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Takahashi (U.S. Patent No. 6,419,336). Applicant respectfully traverses the grounds of rejection.

Independent claims 1, 38, 41 and 42 respectively recite an ink jet recording apparatus comprising, *inter alia*, “a translator for translating the multi-bit jetting data into pulse select information associated with respective drive pulses” and “a drive pulse supplier for selectively supplying at least one of the drive pulses to the pressure generating element in accordance with the pulse select information to drive the pressure generating element”. Applicant submits that Takahashi can not be properly relied upon to teach *at least* these limitations.

For instance, Takahashi teaches that drive waveforms for the respective recording modes are stored in advance in the storage area of the ROM 214, and a drive waveform specified by an instruction is then applied to the actuator (see Takahashi at col. 7, lines 20-43). Further, Applicant notes that the number of drive pulses in each of the drive waveforms corresponding to the respective recording modes in Takahashi are *not variable*, as shown in Fig. 6 of Takahashi.

In addition, the description at col. 9, lines 62-64 of Takahashi, on which the Examiner relies in the rejection, merely teaches the possibility of the *default* number of the drive pulses,

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 10/665,149

which would be the same in each of the drive waveforms for the normal resolution mode or the high resolution mode. Specifically, Takahashi teaches “[i]n the normal resolution mode, three or more ink droplets might, in place of two, be ejected for one dot.” (Takahashi at col. 9, lines 62-63). However, this portion of Takahashi does not teach that at least one of the drive pulses in each drive waveform can be selectively (i.e., variably) applied to the actuator.

By contrast, as described in the specification of the present application and defined by the independent claims, the data developer (control section 46) develops the print data into the multi-bit jetting data (e.g., the 2-bit data shown in the left side of Fig. 6). Further, the translator (decoder 56) translates the multi-bit jetting data into the pulse select information (e.g., the 4 bit data shown in the right side of Fig. 6) associated with the respective drive pulses DP1-Dpn in the drive signal COM. Also, the drive pulse supplier (switch 59) selectively supplies at least one of the drive pulses from the drive signal and supplies the same to the pressure generating element (piezoelectric vibrator 36).

As discussed above, in Takahashi, a single drive signal (i.e., a drive waveform) is prepared for each of the recording modes. In other words, a plurality of drive signals (drive waveforms) are provided in advance. Thus, the number of the drive pulses is *fixed* in each of the drive signals. However, what is selected is not the drive pulse but *the whole drive signal*. Therefore, Takahashi clearly fails to teach the claimed translator and the claimed drive pulse supplier, as defined by independent claims 1, 38, 41 and 42, because all the drive pulses in the

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 10/665,149

drive signal (drive waveform) specified by an instructor must necessarily be applied to the actuator.

Further, with respect to claim 1, Takahashi can not be properly relied upon to teach the limitation of the jetting data indicates “the size of the dot to be recorded in the basic unit pixel when the mode selector selects the basic recording mode”, as claimed. Specifically, the Examiner relies on col. 9, lines 61-64 to support the assertion that Takahashi teaches this limitation.

However, as discussed above, Takahashi merely suggests that the size of pixel in the normal resolution mode may be formed with three pulses instead of two pulses. (see Takahashi at col. 9, lines 61-64). Stated differently, Takahashi teaches a normal resolution mode wherein the two pulses are ejected for each dot. Further, Takahashi suggests that instead of two pulses, the normal resolution dot may be formed by three pulses in order to form a thicker image. However, Takahashi can not be properly relied upon for a teaching that the normal resolution mode has *multiple dot sizes*, such that “jetting data” would indicate a dot size for the purposes of specifying a gradation level. Indeed, the teaching of Takahashi is directed to a *single dot size* which is *used in each of the resolution modes* (for example, two pulses in normal resolution, one pulse in high-resolution). (see Takahashi at col. 3, lines 18-25; col. 8, lines 26-65).

Regarding dependent claim 2, Applicant disagrees with the Examiner’s contention that Takahashi teaches that the bits of the jetting data “indicate the size of the dot to be recorded in the unit recording area”, as claimed. Specifically, the Examiner states that the bits of Takahashi

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 10/665,149

indicate “the gradation level or drop size for each pixel location.” (Office Action at page 5). As discussed above, Takahashi can not properly be relied upon for such a teaching. Takahashi merely teaches that three dots may be used in the normal resolution mode instead of two dots. Takahashi does not, however, teach that the size of the pixel is varied to provide different gradation levels.

With respect to independent claim 38, Applicant submits that Takahashi additionally fails to teach to teach the limitation of “wherein the number of gradation levels that can be recorded in the basic recording mode is larger than the number of gradation levels that can be recorded in the high-resolution recording mode”, as required by claim 38. As discussed above, Takahashi is clearly not teaching “gradation levels” in the normal resolution mode such that the dot size is selectively varied to record different gradation within the same resolution mode. Rather, Takahashi is merely referring to a single dot size which is used in the normal resolution mode, which may be formed from *either* two pulses or three.

Based on the foregoing, Applicant submits that Takahashi fails to anticipate *at least* the limitations discussed above, and therefore fails to anticipate all the limitations of independent claims 1, 38, 41 and 42. Accordingly, claims 1, 38, 41 and 42 should be allowed. Further, Applicant submits that claims 3-8 and 44-45 are allowable at least by virtue of depending from claims 1 and 38, respectively. Likewise, Applicant submits that new claims 47 and 48 are allowable at least by virtue of depending from claims 1 and 38. Applicant notes that the rejection of claim 40 is moot in view of the cancellation of this claim.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 10/665,149

Claim Rejections 35 U.S.C. § 103(a)

Claim 4 stands rejected under 35 U.S.C. § 103(a) based on Takahashi in view of Murayama. As discussed above, Applicant submits that claim 4 is allowable at least by virtue of depending from claim 1, and allowance of claim 4 is therefore requested.

Claims 6-8 and 44-46 stand rejected under 35 U.S.C. § 103(a) based on Takahashi in view of Kubo (U.S. Patent No. 6,257,688). Applicant notes that the rejection of claim 46 is moot in view of the cancellation of the claim. Further, as discussed above, Applicant submits that claims 6-8 and 44-45 are allowable at least by virtue of depending from claims 1 and 38, respectively. Therefore, allowance of claims 6-8 and 44-45 is requested.

In addition, Applicant submits that Kubo fails to teach the limitations of dependent claims 44 and 45, which respectively recite that the “volume of every ink droplet ejected from the recording head is the same irrespective of the mode selected”.

The Examiner concedes that Takahashi fails to teach this limitation, but relies on Kubo to cure the deficient teaching of Takahashi. However, Kubo merely teaches varying the number of pulses in response to ambient temperature levels which are detected. For example, Kubo teaches increasing the number of pulses at low temperature levels. (see Kubo at col. 6, line 57 - col. 7, line 20). However, Kubo fails to provide any teaching or suggestion for using the same volume for every ink droplet irrespective of the mode selected (e.g., basic *or* high resolution mode), as recited by these claims.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 10/665,149

Therefore, even assuming *arguendo* that the Examiner's asserted motivation to combine Takahashi and Kubo is proper, the combination fails to teach or suggest all the limitations of claims 44 and 45.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Brian K. Shelton
Registration No. 50,245

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: July 1, 2005